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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/562,147	05/19/2006	Kazuyuki Ishida	2611-0250PUS1	5538
2252	7590	07/30/2009		
BIRCH STEWART KOLASCH & BIRCH			EXAMINER	
PO BOX 747			LI, SHI K	
FALLS CHURCH, VA 22040-0747			ART UNIT	PAPER NUMBER
			2613	
NOTIFICATION DATE	DELIVERY MODE			
07/30/2009	ELECTRONIC			

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/562,147	<b>Applicant(s)</b> ISHIDA ET AL.
	<b>Examiner</b> Shi K. Li	<b>Art Unit</b> 2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 23 December 2005.

2a) This action is FINAL.      2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 5-8 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 5-8 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All    b) Some \* c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO-1448)  
 Paper No(s)/Mail Date 12/23/2005, 12/18/2006

4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_

5) Notice of Informal Patent Application

6) Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to because of the following mistake: in FIG. 5, the output RZ-DPSK signal should read “0 π 0 π 0 0 π 0 π π 0”. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

2. Claim 6 is objected to because of the following informalities: the differential phase should read (0, π) instead of (0, p). Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mizuhara (U.S. Patent 6,535,316 B1) in view of Miyamoto et al. (U.S. Patent 6,559,996 B1).

Regarding claim 5, Mizuhara discloses in FIG. 3 an apparatus comprising an electrical RZ converter 302a and electrical RZ converter 302b, a Mach-Zehnder modulator 305. The difference between Mizuhara and the claimed invention is that Mizuhara does not specifically disclose a differential encoder. Miyamoto et al. discloses in FIG. 10 a differential encoder 72. One of ordinary skill in the art would have been motivated to combine the teaching of Miyamoto et al. with the apparatus of Mizuhara because the differential encoder produces pre-code electrical signal in complementary form and provides differentiated ternary level pulses having first level, second level and third level at a rising edge, a duration between a rising edge and a falling edge and a falling edge of said pre-coded signal, respectively, so that polarity of a pulse at said rising edge is opposite to that at said falling edge so that a RZ optical signal can be produced corresponding to the differentiated pulse. (See col. 4, lines 25-41 of Miyamoto). Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a differential encoder, as taught by Miyamoto et al., in the apparatus of Mizuhara.

Regarding claim 6, Miyamoto et al. teaches in FIG. 3 and FIG. 14 that the optical signal is modulated by a differential phase of  $(0, \pi)$ .

5. Claim 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mizuhara and Miyamoto et al. as applied to claims 5-6 above, and further in view of Conradi (U.S. Patent Application Pub. 2003/0156774 A1).

Mizuhara and Miyamoto et al. have been discussed above in regard to claims 5-6.

Furthermore, Miyamoto et al. teaches in FIG. 11 inverter for generating an inverted differential signal. The difference between Mizuhara and Miyamoto et al. and the claimed invention is that Mizuhara and Miyamoto et al. do not teach using a clock signal in the RZ converter. Mizuhara refers in col. 3, lines 7 to prior art for the structure of a RZ converter. Conradi teaches in FIG. 5 a NRZ-to-RZ converter 600 comprising a AND gate and a clock signal. One of ordinary skill in the art would have been motivated to combine the teaching of Conradi with the modified apparatus of Mizuhara and Miyamoto et al. because an AND gate is commonly available and inexpensive. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use an AND gate and a clock signal for a RZ converter, as taught by Conradi, in the modified apparatus of Mizuhara and Miyamoto et al. because an AND gate is commonly available and inexpensive.

Regarding claim 8, Miyamoto et al. teaches in FIG. 11 exclusive OR and one-bit delay.

#### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shi K. Li whose telephone number is 571 272-3031. The examiner can normally be reached on Monday-Friday (6:30 a.m. - 4:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Vanderpuye can be reached on 571 272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

skl  
28 July 2009

/Shi K. Li/  
Primary Examiner, Art Unit 2613